Claims:

1. A method of attaching a bulk element processing an optical beam to a PLC and optically aligning the bulk element with an optical element formed on the PLC, said method comprising the steps of:

a. securing the bulk element to a first side of a substrate;

b. securing a first side of a flexure element to the first side of the substrate;

c. securing a second side of the flexure element to a first side of PLC on which the optical element is formed such that the bulk element and the optical element are in optical alignment to within a first level of tolerance; and

d. subsequent to step (c), exerting a force on at least a second side of the substrate to thereby flex the flexure element, said force causing sufficient flexure of the flexure element to optically align the bulk element and optical element to within a second level of tolerance that is more stringent than the first level of tolerance.

2. The method of claim 1 further comprising the step of monitoring an optical coupling efficiency of an optical beam propagating between the bulk element and optical element.

3. The method of claim 1 wherein the step of exerting a force is performed such that the coupling efficiency is maximized.

4. The method of claim 1 wherein the optical element is a planar waveguide formed on the PLC.

5. The method of claim 1 wherein the bulk element is a semiconductor laser.

6. The method of claim 5 wherein the substrate is formed from aluminum nitride.

7. The method of claim 1 wherein the bulk element is selected from the group consisting of a semiconductor laser, a semiconductor optical amplifier, a light emitting diode, a beam splitter, a thin film, a filter, a mirror, a birefringent material, a polarizer, and a diffractive element.

8. The method of claim 1 wherein the flexure element is formed from gold or a gold alloy.

9. The method of claim 1 wherein the flexure element is formed from lead.

10. The method of claim 1 wherein the flexure element is formed from nickel or a nickel alloy.

11. The method of claim 1 wherein the flexure element is formed from Kovar™.

12. The method of claim 1 wherein the flexure element is formed from a thermally conductive material sufficient to serve as a heat sink for the bulk element.

13. The method of claim 1 wherein the second side of the substrate on which the force is exerted is a back surface of the substrate opposing the first side of the substrate.

14. The method of claim 1 wherein the second side of the substrate on which the force is exerted is an edge of the substrate.

15. The method of claim 1 further comprising the step of securing an extension element to an edge of the PLC such that the extension element is located directly below the bulk element.

16. The method of claim 15 wherein said extension element has an etched pocket allowing clearance for the bulk element.

17. The method of claim 1 further comprising the step of enclosing the substrate with a cover that mates with the first side of the PLC.

18. The method of claim 17 wherein said substrate has an etched pocket allowing clearance for the bulk element.

19. The method of claim 15 further comprising the step of enclosing the substrate with a cover that mates with both the first side of the PLC and the extension element.

20. The method of claim 17 wherein the cover forms a hermetic seal with the first side of the PLC.

21. The method of claim 20 wherein the cover is formed from Kovar™.

22. The method of claim 20 wherein the cover is formed from silicon.

23. The method of claim 20 wherein the cover is formed from Pyrex™.

24. The method of claim 20 wherein the hermetic seal is established by a solder seal ring.

25. The method of claim 1 further comprising the step of securing a retaining disk between the first side of the flexure element and the first side of the substrate.

26. The method of claim 25 wherein said retaining disk has a diameter greater than a diameter of the flexure element.

27. The method of claim 25 wherein said flexure element and said retaining disk are formed from a common material.

28. An optical apparatus constructed in accordance with the method of claim 1.

29. A method of attaching a bulk element processing an optical beam to a first substrate and optically aligning the bulk element with an optical element located on the first substrate, said method comprising the steps of:

a. securing the bulk element to a first side of a second substrate;

b. securing a first side of a flexure element to the first side of the second substrate;

c. securing a second side of the flexure element to a first side of first substrate on which the optical element is formed such that the bulk element and the optical element are in optical alignment to within a first level of tolerance; and

d. subsequent to step (c), exerting a force on at least a second side of the second substrate to thereby flex the flexure element, said force causing sufficient flexure of the flexure element to optically align the bulk element and optical element to within a second level of tolerance that is more stringent than the first level of tolerance.

30. The method of claim 29 further comprising the step of monitoring an optical coupling efficiency of an optical beam propagating between the bulk element and optical element.

31. The method of claim 29 wherein the step of exerting a force is performed such that the coupling efficiency is maximized.

32. The method of claim 29 wherein the optical element is a planar waveguide formed on the first substrate.

33. The method of claim 29 wherein the bulk element is a semiconductor laser.

34. The method of claim 33 wherein the second substrate is formed from aluminum nitride.

35. The method of claim 29 wherein the bulk element is selected from the group consisting of a semiconductor laser, a semiconductor optical amplifier, a light emitting diode, a beam splitter, a thin film, a filter, a mirror, a birefringent material, a polarizer, and a diffractive element.

36. The method of claim 29 wherein the flexure element is formed from gold or a gold alloy.

37. The method of claim 29 wherein the flexure element is formed from lead.

38. The method of claim 29 wherein the flexure element is formed from nickel or a nickel alloy.

39. The method of claim 29 wherein the flexure element is formed from Kovar™.

40. The method of claim 29 wherein the flexure element is formed from a thermally conductive material sufficient to serve as a heat sink for the bulk element.

41. The method of claim 29 wherein the second side of the second substrate on which the force is exerted is a back surface of the second substrate opposing the first side of the substrate.

42. The method of claim 29 wherein the second side of the second substrate on which the force is exerted is an edge of the second substrate.

43. The method of claim 29 further comprising the step of securing an extension element to an edge of the first substrate such that the extension element is located directly below the bulk element.

44. The method of claim 43 wherein said extension element has an etched pocket allowing clearance for the bulk element.

45. The method of claim 29 further comprising the step of enclosing the second substrate with a cover that mates with the first side of the first substrate.

46. The method of claim 45 wherein said first substrate has an etched pocket allowing clearance for the bulk element.

47. The method of claim 43 further comprising the step of enclosing the second substrate with a cover that mates with both the first side of the first substrate and the extension element.

48. The method of claim 45 wherein the cover forms a hermetic seal with the first side of the first substrate.

49. The method of claim 48 wherein the cover is formed from Kovar™.

50. The method of claim 48 wherein the cover is formed from silicon.

51. The method of claim 48 wherein the cover is formed from Pyrex™.

52 The method of claim 48 wherein the hermetic seal is established by a solder seal ring.

53. The method of claim 29 further comprising the step of securing a retaining disk between the first side of the flexure element and the first side of the substrate.

54. The method of claim 53 wherein said retaining disk has a diameter greater than a diameter of the flexure element.

55. The method of claim 53 wherein said flexure element and said retaining disk are formed from a common material.

56. An optical apparatus constructed in accordance with the method of claim 29.